PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Item #5 (Rev.2)
ID #13912

ENERGY DIVISION **RESOLUTION E-4717**
June 11, 2015

R E S O L U T I O N

Resolution E-4717. Revisions to the Self-Generation Incentive Program (SGIP) Handbook and forms and requirements for residential advanced energy storage applications.

Pacific Gas and Electric Company (PG&E), Center for Sustainable Energy (CSE), Southern California Edison Company (SCE), Southern California Gas Company (SCG)

PROPOSED OUTCOME:

- Approve the joint advice filing, with modifications to address protested issues and treatment of program applications confirmed before the date this resolution is approved.

SAFETY CONSIDERATIONS:

- There are no safety implications related to this resolution.

ESTIMATED COST:

- There is no expected cost related to implementing this resolution.

By Advice Letter PG&E 3552-G/4563-E, CSE 55, SCE 3165-E, and SCG 4741 filed on January 20, 2015.

SUMMARY

This resolution approves with modifications proposed changes to the Self-Generation Incentive Program (SGIP) Handbook and program forms related to residential advanced energy storage (AES) applications. Applicants whose reservations are confirmed following the approval date of this advice letter (AL) shall be required to fill out and sign an "Affidavit" which spells out system operating and data reporting requirements. This resolution also addresses

eligibility requirements for residential AES applications which were confirmed prior to the date of this resolution.

BACKGROUND

The Commission established the SGIP in 2001 in Decision (D.) 01-03-073 to encourage the diffusion of new distributed generation (DG) technologies. In 2008 the Commission added residential AES to the list of eligible technologies in D.08-11-044, with the caveat that they be coupled with another SGIP eligible technology. Following the passage of Senate Bill (SB) 412 (Kehoe, 2009) the Commission approved D.11-09-015 which allowed AES to be a stand-alone SGIP technology.

Since 2012 the SGIP program administrators (PAs) have received many residential AES applications and have observed that some are marketed solely as backup systems and may be installed with the intent to use them solely for this purpose. This has concerned the PAs because the Handbook contains a provision that SGIP funding is not available for "(B)ackup systems intended solely for emergency purposes."[1]

As a result of this concern, the PAs reached out to the Commission's Energy Division (ED) for guidance. On October 17, 2014 Edward Randolph, the director of ED, responded with a letter containing three proposed requirements for residential AES applicants seeking SGIP funding. The proposed requirements were intended to ensure that statutory goals of the SGIP program are being met, including improved system reliability and reduced greenhouse gas (GHG) emissions and peak demand.[2] Energy Division's three proposed requirements were:

1. Host customers are on a time-of-use (TOU) or critical peak pricing type of rate,
2. The system is certified in writing by the installer/applicant to be configured for regular (i.e. more than backup only) operation, and

1. [1] 2015 SGIP Handbook, Section 4.2.5. The Commission originally prohibited backup-only systems in D.01-03-073 (see footnote 12 of Attachment 1).

2. Public Utilities Code 379.6

3. Either the host customer or the system owner has tools to control operation of the AES device to feed energy back to the grid at times of peak demand.

On January 20, 2015, the PAs filed a joint advice letter (AL) to "provide a stronger method to confirm that SGIP incentivized Residential AES systems are used in a manner that meets the stated intention of SGIP: to 'facilitate the integration of [incentivized] resources into the electrical grid, improve efficiency and reliability of the distribution and transmission system, and reduce emissions of the greenhouse gases, peak demand, and ratepayer costs.'"(AL p.2)
The PAs argue that that the proposal embodied in their AL follows the general guidance of the ED letter.

The PAs propose an "Affidavit" (Attachment A of the AL, and reproduced as Appendix A of this resolution) that defines operational requirements of residential AES systems. To be applied to all currently unconfirmed and to future residential AES SGIP applications, the Affidavit is intended to comply with items 2 and 3 in the ED letter by requiring that systems:

1. "Be installed such that the Residential AES System Owner and/or Host Customer must have the tools to control the usage of the AES system when operating in parallel with the grid.
2. "Provide usage/performance data for five (5) years. This current requirement will enable the PAs to learn about the performance of these systems, which will inform future program requirements. All projects must provide historical performance data (15-minute interval data) downloaded by the system owner into a zipped file and emailed to the PA for the first year after payment and/or upon request for five (5) years.
3. "Pass the Residential AES Field Verification Inspection..." (AL p.3)

Regarding the field verification, the PAs attached a copy of the "Residential AES Field Verification Protocols" to their AL (Attachment B of the AL, and reproduced as Appendix B of this resolution). The PAs explain that these protocols will involve inspection of hardware and configuration as well as an operational test.

The PAs propose to require that applicants choose one of the following compliance options, which applicants would select when they complete the Affidavit:

- Option A: "The Host Customer is on a TOU tariff or Demand Reduction Program prior to receiving the SGIP incentive and for five (5) years thereafter"[3] or
- Option B: "Host Customer and/or System Owner agrees, for a minimum period of five (5) years, to discharge the AES system in an amount equivalent to 52 complete cycles per year of the incentivized energy capacity, which is defined as two hours of discharge at the SGIP incentivized power capacity rating, with discharges occurring during peak hours, demand reduction hours, or in a manner that provides benefits as defined by the Host Customer's Utility." (AL Attachment A p.2)

The PAs argue that these two compliance options are consistent with SGIP's disallowance of backup-only systems and support the SGIP goal of reducing grid peak demand. TOU tariffs as well as certain demand reduction programs (e.g. critical peak pricing) discourage demand during peak times. In the absence of one of these price signals, the monitored and quantified charge and discharge cycling would ensure that the system is used to lower the grid's peak demand.

In addition, the PAs propose to add one paragraph to the Handbook (Section 2.3.1) announcing the use of the Affidavit.

NOTICE

Notice of the jointly filed AL was made by publication in the Commission's Daily Calendar. PG&E states that a copy of the Advice Letter was mailed and distributed in accordance with Section 4 of General Order 96-B.

PROTESTS

On February 9, 2015 the joint AL was timely protested by California Energy Storage Alliance (CESA), Outback Power (Outback), Renova Energy Corporation

[3] Also contained in Option A is the caveat: "Note: In the event that the Host Customer changes to a non-TOU tariff or is no longer enrolled in a demand reduction program, the AES System Owner is required to notify the Program Administrator within 30 days of [the] change, and will [be] subject to Compliance [with] Option B for the required five year period."

(Renova), and SolarCity Corporation (SolarCity). On February 17, 2015 PG&E, on behalf of the other SGIP PAs, filed timely reply comments to all four protestants. The substance of the protests and the PAs' reply are discussed below.

In addition, ED sent to the PAs a data request on January 26, 2015, to which the PAs provided responses (see Appendix E). The data request and the responses are also discussed below.

DISCUSSION

We have reviewed the protests and the PAs' reply. Each of the four protestants raises several issues. In the PAs' reply, they address each of the protested issues, as discussed below.

Limitation on Option B compliance:
CESA, Outback, and SolarCity argue that Option B, which requires "discharges occurring during peak hours, or in a manner that provides benefits as defined by the Host Customer's Electric Utility" (AL p.4) needlessly constrains the storage owner/operator. The parties raise several points:

- Outback is concerned that "allowing each individual utility to define what they consider a benefit" gives too much discretion to the utilities who will use it to impede SGIP participation.
- Outback and CESA request that any applicant providing program benefits (e.g. GHG emission or demand reductions, improved transmission and distribution reliability) while discharging the requisite amount (52 full cycles per year) be considered to meet the Option B requirement.[4]

[4] Option B stipulates that the equivalent of 52 annual discharges occur "during peak hours, demand reduction hours, or in a manner that provides benefits as defined by the Host Customer's Utility". Outback and CESA argue that this stipulated condition be broadened to include any behavior that is already a requirement of SGIP participants (e.g. GHG reductions). By making GHG reduction a sufficient condition for accompanying the 52 annual discharges, Outback's and CESA's proposal would remove any requirement related to grid reliability or adequacy.

- CESA and SolarCity point out the emerging CAISO wholesale market as a potential means of assisting the grid that should be recognized here. SolarCity shares this opinion and asks that the Option B discharging be allowed "either (1) during peak hours or demand reduction hours, (2) or in a manner that provides benefits as defined by the Host Customer's Utility, or (3) in a manner that provides services into the CAISO wholesale markets."

In their reply, the PAs do not object to CAISO participation being one means of demonstrating grid support, but note that currently CAISO tariffs do not allow for aggregated behind-the-meter storage in configurations of less than 100 kW, and so we require additional language to reflect this, as provided below. The PAs also are willing to allow CESA's and Outback's request to consider as compliant with Option B any applicant providing program benefits (e.g. GHG emission or demand reductions, improved transmission and distribution reliability) while discharging the required amount.

We recall, however, that ED's instructions in the October 17 letter were to permit TOU and critical peak pricing (e.g. PG&E's SmartRate program), and we are reluctant to extend eligibility to other, undefined programs. Therefore we will restrict the demand response portion of Option B to behavior which mimics that of PG&E's SmartRate program or programs at the other electric utilities that are comparable.

We agree with the parties that CAISO participation could provide grid support and thus should be encouraged by SGIP, if and when SGIP residential recipients become eligible to participate in those markets. Therefore we will modify the language of Option B to reflect this, as provided below.

Finally, we find that the proposed language, "…or in a manner that provides benefits as defined by the Host Customer's Electric Utility" is vague and unnecessary. It is vague because it does not specify who at the electric utility (or when or how) will be making this determination. It is unnecessary because the other provisions (i.e. discharging during peak or demand reduction hours, or in a manner that provides services into the CAISO markets) are adequate. The provision cited above thus undermines the purpose of the Affidavit, which is to make clear and explicit rules for AES eligibility. Therefore, we will remove it from the language of Option B.

Accordingly, we modify the Option B language and adopt it, as follows (see Attachment C):

> "Host Customer and/or System Owner agrees, for a minimum period of five (5) years, to discharge the AES system in an amount equivalent to 52 complete cycles per year of the incentivized energy capacity, which is defined as two hours of discharge at the SGIP incentivized power capacity rating, with discharges occurring either (1) during peak hours or peak day events (such as those called by PG&E's SmartRate program), or (2) in the manner that it would behave if it were bid as demand response into the CAISO wholesale markets (when they become available for residential AES customers)."

Incorporation of the Affidavit into the application form:
SolarCity requests that the contents of the proposed Affidavit be incorporated into the existing incentive reservation request form, in order to streamline the process. The PAs agree with this in principle in their reply, and commit to investigating the feasibility of implementing this once the AL is approved. We also wish to encourage the simplification of administrative processes, and order the PAs to complete this integration within 60 days of effective date of this resolution.

Clarification on which programs qualify as demand reduction:
SolarCity notes that a customer's participation in demand reduction programs is potentially involved in both Option A and Option B, and requests that the PAs clarify which types of programs would qualify. In order to maintain flexibility and to avoid the need to wait for Handbook changes which would specify exactly which programs qualify, SolarCity does not request a specific list of programs, but seeks general agreement that demand response, critical peak pricing, peak time rebate, and similar programs would qualify. In their reply, the PAs agree with SolarCity's characterization of what is intended by "demand reduction."

As we noted above in addressing the language of Option B, ED instructed the PAs in the October 17 letter to permit TOU and critical peak pricing (e.g. PG&E's SmartRate program), and we are reluctant to extend eligibility to other, as yet undefined programs. Therefore, we will modify the "Demand Reduction Program" language under Option A to say "critical peak pricing type of program (e.g. PG&E's SmartRate) or bids into the CAISO wholesale markets." (See Appendix C.)

Entity responsible for conducting field tests:
SolarCity requests clarification on which entity would be conducting the field tests which are described in the "Residential AES Field Verification Protocols" (Appendix B). In their reply, the PAs indicate that the inspections will be conducted by parties responsible to the PAs, that is, either PA employees or inspectors contracted to the PAs. The PAs also explain how the host or system owner would assist during the inspection, and reiterate the need for physical inspections by the PA in order to confirm the system configuration as claimed. We find this clarification of the inspection protocol as well as the explanation of its purpose to be reasonable, and modify the adopted Filed Verification Protocols accordingly, as shown in Appendix D.

Test in AC vs. DC:
SolarCity requests clarification regarding whether the "discharge current" and "discharge voltage" tests described in the "Residential AES Field Verification Protocols" (AL Attachment B) would be in alternating current (AC) or direct current (DC). SolarCity recommends that these be done in AC, which is the mode in which most homes operate. In their reply, the PAs agree with SolarCity's understanding. This is reasonable and we accept that the tests will measure AC current and voltage, as shown in Appendix D.

Metering requirements:
Renova expresses its concern about metering requirements, which it understands to entail the installation of a revenue-grade meter at the customer's cost, which it states is considerable and thus unreasonable. In their reply, the PAs explain that, "…the metering equipment that is part of the device may be used in lieu of the standalone metering tools (Dent, Powersight) or in lieu of a more costly metering solution…" Thus, the PAs would allow the storage system's built-in metering, unless there is any reason to doubt its accuracy. We accept the PAs assurance on this count, and have changed the language to reflect this in the adopted Protocols, as shown in Appendix D.

Third party system control:
Outback and CESA argue that there are or may be instances (e.g. when aggregating many loads to participate in wholesale markets or demand response programs) where it is advantageous for the operation of the AES system to be under the control of an entity who is neither the host customer nor the system owner. In their reply, the PAs do not object to third party control, but offer the reminder that host customers and/or system owners are responsible for

discharge and/or data reporting requirements, and are subject to the potential penalties as described in Section 7 ("Infractions") of the SGIP Handbook.

We agree with the intent of Outback's and CESA's comments, namely, to allow third party control of the system. However, because it is the host customer and/or system owner who bear the ultimate responsibility for ensuring compliance, we see no need to modify the language of the Affidavit to reflect this alternate control arrangement.

Clarification allowing for system control by host customer:
Renova points out that the proposed Affidavit language omits "Host Customer" from the list of those who control the AES system (see Appendix A, first box under "Requirements of Host Customers and System Owners"). In their reply, the PAs agree that this proposal is reasonable and offer to modify the language as follows, "The AES System Owner and/or Host Customer have the tools to control the usage of the AES system when operating in parallel with the grid." The PAs explain further, "The intent, again, is to demonstrate that the system can be discharged whether remotely or onsite to service onsite load or deliver to the grid."

The proposed addition of "Host Customer" is in keeping with the rest of the AL, and the language change proposed in the PAs' reply correctly reflects this. Therefore, we will approve it. We note that the lack of inclusion in this text of "third party control," which was discussed in the previous section, does not preclude third parties from subsequently having operational control of the systems. It simply means that either the host customer or the system owner must have the tools with which to control the AES system.

We adopt these language changes, as shown in Appendix C.

Applicability to stand-alone and coupled AES systems:
Renova requests clarification on whether the proposed rules embodied in the proposed Affidavit apply to stand-alone AES systems as well as those paired with photovoltaic systems. In their reply, the PAs state that the Affidavit would apply to all AES systems, whether stand-alone or coupled. We agree with this interpretation, and reflect this in the adopted language in Appendix C.
Applicability of the rules proposed in the AL:
Outback and CESA request that the rules proposed in the AL apply only prospectively, to applicants who have not previously filed reservation requests.

These numbers differ because there are currently many applications which have been received by the PAs which have not been confirmed.[5] In their reply, the PAs state that, as their filing had indicated, the rules would apply to a larger segment, namely, those applications confirmed after the approval date of this AL. The PAs also explain that, for those applications which have already been confirmed, they have developed a "Questionnaire" which they will use at the time of inspections to "capture intended-use data." (PA reply p.4)

Since 2001, the SGIP rules have stipulated that payments will not be made for generation intended for backup only. There is nothing new about this requirement. However, the recent introduction of AES (and, specifically here, for residential applications) into the program has presented the need for new guidance on how to ensure compliance with this requirement. Adopting specific protocols, such as those proposed in the AL, is appropriate and necessary to provide both participants and PAs with clearly established standards and protocols. At the same time, moderation suggests that these protocols not be imposed on applications already confirmed. For this reason, we find the PAs' proposal to apply the proposed rules to not-yet-confirmed applications to represent a reasonable balance.

Rules for applications not already confirmed:
Energy Division sought to understand how applications that were already confirmed would be treated with respect to the "no backup-only" rule, and so, on January 26, 2015, sent a data request to all the PAs asking how they would handle these cases (See Appendix E). SCG responded by noting that it had no confirmed applications (implying that it would not need to address this situation). The other three PAs indicated that as part of their normal inspection process for these applications, they would be presenting the host customer or system owner with the "Questionnaire" mentioned in their reply comments requesting information about the intended use of the residential AES system.

[5] The 2014 Q4 (posted January 15, 2015) SGIP public project database shows that there are 92 residential AES projects which have been applied for but not yet confirmed (CSE 34; PG&E 7; SCE 50; SCG 1). There are a further 371 residential AES projects in one of the following statuses: "ICF Inspection", "ICF Review", "ICF Suspended", "ICF Technical Review", PPM Confirmed" , or "RRF Confirmed" (CSE 83; PG&E 167; SCE 121; SCG 0).

The three PAs' descriptions of the Questionnaire are similar but not identical.

- PG&E indicates the Questionnaire will inquire:
  - How the system will be operated,
  - How often it will be used, and
  - The host customer tariff, if this information is available.
- CSE states that the Questionnaire will ask the applicant to identify at least one application or service other than emergency backup that the AES will be providing.
- SCE indicates it may present a Questionnaire to the applicant at the time of the inspection, requesting information to indicate the system is designed for use other than emergency backup power.

Likewise, the three PAs' descriptions of the consequences of an application's failure regarding this criterion are similar but not identical. If a system is found to be not compliant in this regard, then:

- PG&E may contact the System Owner to inform them of program rules and may withhold the incentive.
- CSE may cancel the application.
- SCE is not explicit in this regard.

We are concerned that the PAs have left unaddressed in this AL a very important detail: how they plan to treat already confirmed SGIP applications for residential AES systems. Their reply comments help to explain the rest of their strategy, as do their responses to the data request. We find that the Questionnaire approach is reasonable, but are concerned that it is not yet finalized, as evidenced by the variations in the responses. We are concerned that the PAs, by including non-declarative words like "may," are leaving room for more controversy. Also, we are concerned by SCE's response, which suggests that system design, rather than intended system use, will drive its decision on whether an applicant qualifies.

We will require the PAs to use a common and uniform Questionnaire similar to what PG&E and CSE have described in their data responses, and require they finalize and publish this form on their respective SGIP websites as soon as possible. Furthermore, we will require that PAs withhold SGIP incentives from applicants who fail to meet the "no backup-only" criterion – this is not up to the PAs' discretion.

COMMENTS

The Draft Resolution was mailed on April 17, 2015. Comments were filed timely on May 11, 2015 by PG&E, filing on behalf of the SGIP PAs, and by SolarCity.

Demand response programs:
Both the PAs and SolarCity raise questions related to demand response program compliance. The PAs anticipate that new demand reduction programs will soon emerge which could potentially help residential storage qualify for SGIP. They note the draft Resolution's allowance of a critical peak pricing type of program for rebate eligibility and request clarification on what characteristics these demand reduction programs should have. In addition, the PAs ask guidance on how to verify that AES devices are either participating in, or behaving as if they were participating in, possible future CAISO DR markets.

Similarly, SolarCity complains that the original AL's allowance for compliance via "demand reduction" programs embodied a consensus about current as well as future programs, and that the proposed draft resolution language closes off programs including such services as frequency regulation and voltage support. SolarCity also argues that the CAISO option need not be part of Option A, which it understands as focused on price arbitrage; but it then argues that instead of monitoring for behavior which mimics CAISO participation, which is under Option B, the participant should rather simply be on the CAISO tariff.

We appreciate the thoughtful critiques by both parties on this topic. To address the PAs' concern about tracking behavior which resembles participation in CAISO DR markets, we have removed that feature from Option B (but retain it in Option A, where it allows actual CAISO market participation to justify the SGIP rebate). To add specificity on which actual utility tariffs will be compliant, we have added SDG&E's Reduce Your Use to Options A and B. With respect to further changes to the draft Resolution we note that the guidance provided by the draft resolution, as amended here is sufficient for present day compliance. Second, regulatory tools, such as advice letter filings, exist, should new demand reduction programs become available and should the PAs consider it necessary to require further Commission guidance. And finally, the policy adopted here is expected to be interim. The Assigned Commissioner in R.12-11-005 issued a Ruling on April 29, 2015 which addressed the question (see Question 21 on page 17) of residential storage and the need to avoid paying for back-up only systems. We expect for that ruling to lead to a proposed decision and then a final decision

within the next several months. The procedures set forth in this resolution, therefore, must be understood as interim in nature and will be reviewed and very possibly revised in the near future.

Metering:
The PAs wish to ensure that metering costs be included and disclosed in the total elibible costs. We agree that these costs should be allowed in the total eligible costs (which can affect the participant by raising the maximum rebate), and will leave it to the discretion of the PAs as to whether any changes to application forms need to be made to reflect this.

"Wholesale" CAISO markets:
SolarCity wishes to remove "wholesale" from the CAISO option to remove possible future confusion. This issue is rendered moot by the change to the Affidavit language concerning CAISO market participation. Still on the topic of CAISO markets, to increase specificity, we replace "Proxy Demand Response, or equivalent", to replace "wholesale markets."

Updates and posting of the Affidavit and Field Verification Protocols:
The PAs are updating the Field Verification Protocols pursuant to draft Resolution direction regarding voltage measurements, and request authorization to make any future updates to the Protocols as guided by later experience. The PAs also request authority to post both documents on their program websites, rather than in the program Handbook. We agree that both proposals are practical and serve the interests of the SGIP, and so approve them.

Deadline for document integration into reservation request:
Solar City appreciates the PAs and the Commission's agreement to integrate the Affidavit into the application form, but requests a deadline for this to be accomplished, which the draft resolution did not do. SolarCity suggests that this be accomplished within 30 to 60 days of the final resolution's effective date. We agree that such a deadline provides more certainty to all parties, and have made the change in the body of the resolution to reflect this.

Projects with confirmed reservations:
SolarCity is concerned that the more informal process (i.e. the Questionnaire) established in the resolution for dealing with residential storage applications which have already received confirmed reservations in fact imposes new performance requirements that were not detailed in the SGIP Handbook at the

time that they applied. SolarCity believes these systems should be approved for the program based on their capabilities rather than their expected usages. We reject this argument because capabilities without actions do not benefit the grid or the ratepayers who are paying for the SGIP incentives. Furthermore, the rule against systems which are backup-only has been part of SGIP since its inception, and the current discussion of procedures is simply an effort to clarify how PAs and participants can comply.

FINDINGS

1) D.08-11-044 allowed AES into the SGIP program, with the caveat that it be coupled with another SGIP-eligible technology. D.11-09-015 allowed AES into the SGIP as a stand-alone technology.
2) Since 2012 the SGIP program administrators (PAs) have received many residential AES applications and have observed that some are marketed solely as backup systems and may be installed with the intent to use them solely for this purpose.
3) The SGIP Handbook does not allow funding for "(B)ackup systems intended solely for emergency purposes."[6]
4) On January 20, 2015 the PAs filed a joint AL (PG&E 3552-G/4563-E, CSE 55, SCE 3165-E, and SCG 4741) to "provide a stronger method to confirm that SGIP incentivized Residential AES systems are used in a manner that meets the stated intention of SGIP: to 'facilitate the integration of [incentivized] resources into the electrical grid, improve efficiency and reliability of the distribution and transmission system, and reduce emissions of greenhouse gases, peak demand, and ratepayer costs.'"
5) The PAs propose an "Affidavit" that defines operational requirements of residential AES systems, to be applied to all currently unconfirmed and to future residential AES SGIP applications.
6) The PAs propose "Residential AES Field Verification Protocols" to be applied at the time that systems are inspected.
7) The PAs responded to an Energy Division data request seeking information on how the PAs intend to treat SGIP residential AES applications which were already confirmed, but not yet paid, by the program. The PAs state that they

[6] This constraint was originally introduced in D.01-03-073 (Attachment 1, footnote 12).

are developing a common Questionnaire that they intend to present to applicants at the time of the final inspection. The Questionnaire would elicit information on how the system is intended to be used and inform the PAs' determination whether to withhold incentive payment.

8) On February 9, 2015, four parties filed timely protests – CESA, Outback, Renova, and SolarCity.
9) On February 17, 2015 the SGIP Program Administrators filed a joint reply to the protests.
10) The Commission has evaluated the issues raised in protests and finds it reasonable to modify the proposed Affidavit as shown in Appendix C, and to modify the proposed Field Verification Protocols as shown in Appendix D.
11) The Commission agrees that SolarCity's proposal to require the PAs to integrate the Affidavit into the reservation request form will expedite compliance and is reasonable.
12) The Commission finds the use of a uniform Questionnaire to be a reasonable approach to determining whether those residential AES applications which are already confirmed (but not yet paid) should be eligible for SGIP incentives.
13) The PAs do not have discretion to make SGIP incentive payments to applicants whose AES systems fail to meet the "no backup-only" criterion.
14) The proposed addition to the SGIP Handbook (Section 2.3.1) announcing the use of the Affidavit is reasonable and necessary.

THEREFORE IT IS ORDERED THAT:

1. The joint advice letter (PG&E 3552-G/4563-E, CSE 55, SCE 3165-E, and SCG 4741) is approved, as modified herein.
2. The Program Administrators (PAs) shall use the adopted Affidavit Form and Field Verification Protocol provided in Appendices C and D, respectively, and incorporate these adopted forms (in clean copy) into the SGIP Handbook or any other relevant program documentation.
3. Within 60 days of the effective date of this resolution, the PAs shall integrate the Affidavit into the reservation request form.
4. The Program Administrators (PAs) shall use a common and uniform Questionnaire for system owners with confirmed (but not yet paid) program applications, similar to what Pacific Gas & Electric and Center for Sustainable Energy provided in response to Energy Division's data request as shown in Appendix E. The PAs shall finalize and publish this form on their respective SGIP websites as soon as possible.

5. The Program Administrators shall withhold SGIP incentives from applicants who fail to meet the "no backup-only" criterion.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on June 11, 2015 the following Commissioners voting favorably thereon:

_____
TIMOTHY J. SULLIVAN
Executive Director

Appendix A:

(Attachment A to the AL)

Attachment A

Self-Generation Incentive Program
Residential AES Eligibility Affidavit

The Self-Generation Incentive Program (SGIP) offers incentives for qualifying Advanced Energy Storage (AES) Projects that meet Program goals. This Affidavit is designed to ensure that SGIP-incentivized projects will "increase deployment of distributed generation and energy storage systems to facilitate the integration of those resources into the electrical grid, improve efficiency and reliability of the distribution and transmission system, and reduce emissions of greenhouse gases, peak demand, and ratepayer costs."[7]

Per Section 4.2.5 of the 2014 SGIP Handbook, "Back-up[8] systems intended solely for emergency purposes" are not eligible for SGIP incentives. The eligibility requirements in this Affidavit have been developed to ensure that all residential AES systems participating in the SGIP will be used for more than just back-up emergency purposes.

This Affidavit must be signed by both the Residential AES system Host Customer and Residential AES System Owner in order to receive an SGIP incentive. All Host Customers and System Owners must comply with the requirements in the first list. Then, applicants must select either Compliance Option A or Compliance Option B, below. Should a Host Customer or System Owner fail to operate 95% of all incentivized systems[9] (or a single system if only one Project has been incentivized) according to the requirements outlined below, or fail to provide the required data to the Program Administrators, this may be considered an infraction, and both parties may be subject to the conditions described in Section 7 of the SGIP Handbook.

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1. Senate Bill 861, Chapter 35 SEC 156 (a) (1) pp. 151, and Public Utilities Code (PUC) 379.6

2. **Backup Generators:** Operate as short-term temporary replacement for electrical power during periods of Electric Utility power outages. In addition to emergency operation they ordinarily only operate for testing and maintenance. Backup generators do not produce power to be sold or otherwise supplied to the grid or provide power to loads that are simultaneously serviced by the Electric Utility grid. Backup generators only service customer loads that are isolated from the grid either by design or by manual or automatic transfer switch.

3. 95% of systems within any Program Administrator's territory and calculated on an ongoing basis

Requirements of Host Customers and System Owners:

☐ The AES system owner has the tools to control the usage of the AES system when operating in parallel with the grid.

☐ Provide performance data to the Program upon request (emailed, zipped file of 15 minute interval data) for a period of five (5) years.

☐ Pass the Residential AES Field Verification Inspection.

Compliance Option A – Host Customer on TOU tariff or Demand Reduction Program

☐ The Host Customer is on a TOU tariff or Demand Reduction Program prior to receiving the SGIP incentive and for five (5) years thereafter.

Note: In the event that the Host Customer changes to a non-TOU tariff or is no longer enrolled in a demand reduction program, the AES System Owner is required to notify the Program Administrator within 30 days of change, and will subject to Compliance Option B for the required five year period.

Compliance Option B – Host Customer without TOU Tariff or Demand Reduction Program

☐ Host Customer and/or System Owner agrees, for a minimum period of five (5) years, to discharge the AES system in an amount equivalent to 52 complete cycles per year of the incentivized energy capacity, which is defined as two hours of discharge at the SGIP incentivized power capacity rating, with discharges occurring during peak hours, demand reduction hours, or in a manner that provides benefits as defined by the Host Customer's Utility.

Data Provision Requirements for AES Projects

System owners and host customers agree to participate in Measurement and Evaluation (M&E) activities as required by the CPUC for five (5) years. These activities will be performed by the Program Administrator (PA) or the PA's independent third-party consultant and include, but are not limited to the development of an M&E monitoring plan, installation of metering equipment or review/inspection of metering equipment installed by the project developer or host Site, collection and transfer of data from installed system monitoring equipment, whether installed by Host Customer, System Owner, a third party, or the PA.

Data requirements for AES project eligibility consist of the following:

- Data shall be provided to SGIP PAs within fifteen (15) days of the request of the PA
- Data reports shall include:
    - Identification of date and time period associated with each charge and discharge event during the requested reporting period.
    - Measured power and energy, metered on the AC side of the installed system, for each charge and discharge event.

Host Customer Address_____

System Owner_____

Signature _____

Date _____

Host Customer (if not System Owner)_____

Signature _____

Date _____

Appendix B:

(Attachment B to the AL)

Attachment B

Residential AES Field Verification Protocols

During the field verification site visit the inspector will confirm the following:

1. Equipment & Configuration.
    - Installed AES system matches system specifications in SGIP application.
    - AES system is configured for Parallel Operation as defined in the SGIP Handbook.
    - If SGIP/CSI eligible generator is located on Project Site:
        - Verify rated system size of SGIP eligible generator.
        - Verify CEC-AC rated system size of CSI eligible generator.

2. Operation & Performance
    1. Verify AES system operating modes (standby, charging, discharging)

3. AES System Discharge Testing

    This requirement can be met by completing the first item below or by completing both items II and III.

    I. Two hour continuous discharge test at the incentivized rated capacity. AES system output can be measured to native load, grid, artificial load, or a combination thereof (depending on what is practical at the installation).
        a. Native load
            i. Load must be available for two hour duration discharge
        b. Grid
            i. Export to grid must be possible based upon Interconnection Agreement
        c. Artificial load
            i. Power electronics may need to be self‐commutated (most inverters are self‐commutated)

    II. A test report provided by the manufacturer and/or system integrator that demonstrates that the AES system can discharge at its incentivized rated capacity for a minimum of two hours. The test report must include:
        a. Description of testing approach methodology
        b. Load type

c. Ambient temperature
d. Discharge current
e. Discharge voltage
f. Inverter efficiency
g. Rated power discharge for complete two hour period

III. Discharge the AES system at or above its incentivized rated capacity, and record the output to native load, grid or artificial load (depending on what is practical at the installation) for a period of 30 minutes using a logger that measures voltage and current (such as Dent or Powersight). The time of the test, the type of load served by the AES, the state of charge at the start of the test and the ambient temperature must also be reported.

Appendix C:

(Adopted Affidavit Form)

Attachment A

Self-Generation Incentive Program
Residential AES Eligibility Affidavit

The Self-Generation Incentive Program (SGIP) offers incentives for qualifying Advanced Energy Storage (AES) Projects that meet Program goals. This Affidavit applies to all residential AES systems, whether stand-alone or coupled with other distributed generation. This Affidavit is designed to ensure that SGIP-incentivized projects will "increase deployment of distributed generation and energy storage systems to facilitate the integration of those resources into the electrical grid, improve efficiency and reliability of the distribution and transmission system, and reduce emissions of greenhouse gases, peak demand, and ratepayer costs."[10]

Per Section 4.2.5 of the 2014 SGIP Handbook, "Back-up[11] systems intended solely for emergency purposes" are not eligible for SGIP incentives. The eligibility requirements in this Affidavit have been developed to ensure that all residential AES systems participating in the SGIP will be used for more than just back-up emergency purposes.

This Affidavit must be signed by both the Residential AES system Host Customer and Residential AES System Owner in order to receive an SGIP incentive. All Host Customers and System Owners must comply with the requirements in the first list. Then, applicants must select either Compliance Option A or Compliance Option B, below. Should a Host Customer or System Owner fail to operate 95% of all incentivized systems[12] (or a single system if only one Project has been incentivized) according to the requirements outlined below, or fail to provide the required data to the Program

1. Senate Bill 861, Chapter 35 SEC 156 (a) (1) pp. 151, and Public Utilities Code (PUC) 379.6

2. **Backup Generators:** Operate as short-term temporary replacement for electrical power during periods of Electric Utility power outages. In addition to emergency operation they ordinarily only operate for testing and maintenance. Backup generators do not produce power to be sold or otherwise supplied to the grid or provide power to loads that are simultaneously serviced by the Electric Utility grid. Backup generators only service customer loads that are isolated from the grid either by design or by manual or automatic transfer switch.

3. 95% of systems within any Program Administrator's territory and calculated on an ongoing basis

Administrators, this may be considered an infraction, and both parties may be subject to the conditions described in Section 7 of the SGIP Handbook.

Requirements of Host Customers and System Owners:

- ☐ The AES system owner and/or Host Customer have ~~has~~ the tools to control the usage of the AES system when operating in parallel with the grid.
- ☐ Provide performance data to the Program upon request (emailed, zipped file of 15 minute interval data) for a period of five (5) years.
- ☐ Pass the Residential AES Field Verification Inspection.

Compliance Option A – Host Customer on TOU tariff or Demand Reduction Program

- ☐ The Host Customer is on a TOU tariff, dynamic tariff (e.g. PG&E's SmartRate or SDG&E's Reduce Your Use), or agrees to integrate load through the California Independent System Operator's Proxy Demand Response, or equivalent tariff, prior to receiving the SGIP incentive and for five (5) years thereafter.

Note: In the event that the Host Customer changes to a non-TOU tariff or is no longer enrolled in a demand reduction program, the AES System Owner is required to notify the Program Administrator within 30 days of change, and will be subject to Compliance Option B for the required five year period.

Compliance Option B – Host Customer without TOU Tariff or Demand Reduction Program

- ☐ Host Customer and/or System Owner agrees, for a minimum period of five (5) years, to discharge the AES system in an amount equivalent to 52 complete cycles per year of the incentivized energy capacity, which is defined as two hours of discharge at the SGIP incentivized power capacity rating, with discharges occurring during peak hours or peak day events (such as those called by PG&E's SmartRate program or SDG&E's Reduce your Use), of the applicable IOU service territory. ~~during peak hours, demand reduction hours, or in a manner that provides benefits as defined by the Host Customer's Utility.~~

Data Provision Requirements for AES Projects

System owners and host customers agree to participate in Measurement and Evaluation (M&E) activities as required by the CPUC for five (5) years. These activities will be performed by the Program Administrator (PA) or the PAs' independent third-party consultant and include, but are not limited to the development of an M&E monitoring plan, installation of metering equipment or review/inspection of metering equipment installed by the project developer or host Site, collection and transfer of data from installed system monitoring equipment, whether installed by Host Customer, System Owner, a third party, or the PA. The metering equipment that is part of the device may be used.

Data requirements for AES project eligibility consist of the following:

- Data shall be provided to SGIP PAs within fifteen (15) days of the request of the PA
- Data reports shall include:
    - Identification of date and time period associated with each charge and discharge event during the requested reporting period.
    - Measured power and energy, metered on the AC side of the installed system, for each charge and discharge event.

Host Customer Address_____

System Owner_____

Signature _____

Date _____

Host Customer (if not System Owner)_____

Signature _____

Date _____

Appendix D:

(Adopted Field Verification Protocols)

Attachment B

Residential AES Field Verification Protocols

The inspections will be conducted by parties responsible to the Program Administrators (PAs), that is, either PA employees or inspectors contracted to the PAs. The inspector will physically conduct the AES inspections to verify the device can service onsite load, can operate in parallel with the grid, and meets SGIP technical eligibility requirements. The project developer, System Owner or Host Customer will be required to discharge batteries during inspection, and the inspector will witness discharge while onsite at the inspection.

During the field verification site visit the inspector will confirm the following:

1. Equipment & Configuration.
    - Installed AES system matches system specifications in SGIP application.
    - AES system is configured for Parallel Operation as defined in the SGIP Handbook.
    - If SGIP/CSI eligible generator is located on Project Site:
        - Verify rated system size of SGIP eligible generator.
        - Verify CEC-AC rated system size of CSI eligible generator.

2. Operation & Performance
    1. Verify AES system operating modes (standby, charging, discharging)

3. AES System Discharge Testing

    This requirement can be met by completing the first item below or by completing both items II and III.

    I. Two hour continuous discharge test at the incentivized rated capacity. AES system output can be measured to native load, grid, artificial load, or a combination thereof (depending on what is practical at the installation).
        a. Native load
            i. Load must be available for two hour duration discharge
        b. Grid

i. Export to grid must be possible based upon Interconnection Agreement

c. Artificial load
   i. Power electronics may need to be self‐commutated (most inverters are self‐commutated)

II. A test report provided by the manufacturer and/or system integrator that demonstrates that the AES system can discharge at its incentivized rated capacity for a minimum of two hours. The test report must include:
   a. Description of testing approach methodology
   b. Load type
   c. Ambient temperature
   d. Discharge current (in alternating current)
   e. Discharge voltage (in alternating current)
   f. Inverter efficiency
   g. Rated power discharge for complete two hour period

III. Discharge the AES system at or above its incentivized rated capacity, and record the output to native load, grid or artificial load (depending on what is practical at the installation) for a period of 30 minutes using a logger that measures voltage and current (such as Dent or Powersight). The time of the test, the type of load served by the AES, the state of charge at the start of the test and the ambient temperature must also be reported.

Appendix E:

Compilation of SGIP Program Administrator responses to Energy Division data request.

Energy Division (January 26, 2015):

By way of background, note that (1) the advice filing covers only unconfirmed and future applications; and (2) the SGIP program administrators (PAs) were struggling to interpret the "no back-up only" provision of the Handbook (Section 4.2.5 of the 2014 Handbook) and so asked for Energy Division guidance.

Please explain in detail how you, as SGIP Program Administrators, plan to determine for eligibility SGIP residential AES (advanced energy storage) applications which have been received and confirmed by the SGIP prior to the approval date of the advice filing.

PA responses:

CSE (February 6, 2015):

1. CSE will determine the eligibility of residential AES by asking that the system owner complete a Residential AES Questionnaire for the project, which asks the system owner to identify and explain at least one application or service, other than emergency back-up power, that the SGIP storage system will be performing. If the system owner is unable identify and provide information about another service besides backup power, per Section 4.2.5 of the Handbook "Back-up systems intended solely for emergency purposes" are not eligible for SGIP, the application may be cancelled. PAs have the right to follow up with each project individually if they feel that more explanation or information is needed before inspecting the system and/or paying the incentive.

2. CSE may gather additional information from the host customer before or during the field inspection.

3. Residential AES projects will only be approved for payment once CSE has received the completed questionnaire, is satisfied with the answers provided, and the project has passed the field inspection.

PG&E (February 9, 2015):
All residential AES projects that have been received and confirmed already by PG&E prior to the approval date of the advice filing must satisfy SGIP eligibility requirements, as stated under Section 4, Program Eligibility, in the SGIP Handbook. PG&E has implemented a variety of procedures to ensure that only projects that satisfy these eligibility requirements receive incentives.

If a project has reached 'Reservation Confirmed' status prior to the approval date of the advice filing, PG&E has determined the following requirements have been met:

- Reservation Request Form Review is complete; including verifying the Reservation Request Form & Program Contract is complete with signatures, and proof of utility service.
- Verification of Program Eligibility, including that the site hasn't already been interconnected for more than one year and the facility address is confirmed in PG&E's database.
- Application fee has been received.
- Project has passed Technical Review, which includes load verification, peak demand confirmation, future load growth, equipment specs, efficiency documentation, energy efficiency audit report, and executed contract indicating terms, scope of work, equipment, costs and warranty. Technical review also determines that the system is not configured as a back-up "intended solely for emergency purposes", per Section 4.2.5 of the SGIP Handbook. SGIP's 3rd Party Engineer, AESC, must review and sign off on all Residential AES projects before they can move forward to confirmation.
- Equipment eligibility confirmation, including verifying whether the applicant is a California supplier and manufacturer and has been commercially available for 1 year.
- SGIP database must be updated with application information, account information, etc.

If project does not meet all above criteria, the applicant is notified and given timelines for correction.

Once a project successfully meets the above requirements, and the Reservation Request Form and Technical Review are complete, PG&E issues a Reservation Letter. The reservation is 'confirmed' because Residential AES projects are 'two-step'. Projects are given 12 months to submit their completed Incentive Claim Form.

In addition, PG&E will send a Questionnaire to System Owners prior to incentive payment, requesting information about intended use of the Residential AES system. We will inform the System Owner that, per Section 4.2.5 of the SGIP Handbook, back-up systems intended solely for emergency purposes are ineligible, and will ask them to identify other intended uses for the system. We will inquire about how the system will be operated, how often it will be used (number of intended dispatches per year), as well as Host Customer tariff information if they can provide it. If the System Owner responds that the system was intended for back-up and emergency use only, PG&E may contact the System Owner to inform them of program rules and may withhold incentive payment.

Lastly, all Residential AES systems are inspected and must pass inspection demonstrating, among other things, that the system can deliver both to the grid and to onsite load. PG&E has directed their field inspection team to interview Host Customers; the same questions will be asked of Host Customers, such as intended use of the Residential AES system, how often it will be used, whether they can control the system, and what utility rate they are on.

This process will provide the utility valuable information about how System Owners have communicated the various potential uses of Residential AES systems to Host Customers, and how both groups intend to use the systems in the future. We will leverage that information to inform future rules and changes to system requirements.

SCE (February 17, 2015):
For SGIP residential AES projects that have been received and confirmed prior to the approval date of Pacific Gas & Electric Advice Letter 3552-G, as a SGIP PA, SCE will determine eligibility by reviewing the submitted Incentive Claim documentation. If documentation is in order, the site inspection letter will be sent stating an inspection will be scheduled. The PA may include a copy of the Residential AES Questionnaire requesting the Host Customer and/or

System Owner be prepared to provide answers at the time of inspection to indicate the system is designed for use other than emergency back-up power. The "Questionnaire" will be used by all PA's and will consist of the same questions.

The inspector will gather information by asking the Host Customer and/or System Owner the questions from the PA Questionnaire, and any other questions that may provide additional information about the installation. The inspector will conduct the inspection as outlined in the Inspection Protocol.

Residential AES projects will only be approved for payment once the PA has reviewed and approved the Incentive Claim documents, the site has been inspected, the PA is satisfied with the answers provided during inspection, and the project has passed the field inspection.

SCG (February 5, 2015):
SoCalGas does not have any confirmed Residential AES applications.